

Amendments to the Claims:

Status of Claims:

Claims 1-20 are pending for examination.

Claims 1, 10, and 18 are in independent form.

Claims 1-10, 13, and 18 are currently being amended.

1. (Currently Amended) A method for determining a shape of a ~~medical device~~ an implant to be implanted into a subject, comprising:

producing an image of a volume including a ~~defective portion~~ missing segment and a nondefective portion of hard tissue of interest included in the subject;

segmenting the hard tissue of interest within the image;

superimposing a deformable template[[,]] representing a normative shape of an external surface of the hard tissue of interest[[,]] to span the ~~defective portion~~ missing segment, where the template comprises a wireframe including ridge curves and tiling curves, and where the superimposing includes deforming the deformable template; and

determining an external shape of [[an]] the implant[[,]] as a function of respective shapes of the ~~defective portion~~ missing segment and the ~~deformed~~ template, ~~for repairing the defective portion where the implant is configured to fit within the contours of the missing segment.~~

2. (Currently Amended) The method for determining a shape of a ~~medical device~~ an implant as set forth in claim 1, wherein the producing step includes:

producing a volumetric image of the hard tissue.

3. (Currently Amended) The method for determining a shape of a ~~medical device~~ an implant as set forth in claim 2, wherein the step of producing the volumetric image includes:

producing a CT image of the hard tissue.

4. (Currently Amended) The method for determining a shape of a ~~a-medical-device~~ an implant as set forth in claim 1, further including:

determining a position for seating the implant into the ~~defective portion~~ missing segment.

5. (Currently Amended) The method for determining a shape of a ~~a-medical-device~~ an implant as set forth in claim 1, wherein the step of superimposing includes:

warping the deformable template around a deformed bone.

6. (Currently Amended) The method for determining a shape of a ~~a-medical-device~~ an implant as set forth in claim 1, wherein the step of superimposing includes:

warping the deformable template to an external surface of the non-defective portion of the hard tissue of interest.

7. (Currently Amended) The method for determining a shape of a ~~a-medical-device~~ an implant as set forth in claim 1, further including:

determining the normative shape from additional hard tissue representative of the hard tissue of interest.

8. (Currently Amended) The method for determining a shape of a ~~a-medical-device~~ an implant as set forth in claim 7, wherein the step of determining the normative shape includes:

determining the normative shape from additional hard tissue which mirrors the hard tissue of interest.

9. (Currently Amended) The method for determining a shape of a ~~a-medical-device~~ an implant as set forth in claim 1, further including:

modifying the normative shape as a function of a shape of the non-defective portion of the hard tissue of interest.

10. (Currently Amended) A system for determining a shape of a medical device to be implanted into a subject, comprising:

an imaging device for producing an image including a defective portion and a non-defective portion of hard tissue of interest included in the subject;

means for segmenting the hard tissue of interest within the image;

a template spanning the defective portion, the template representing a normative shape of an external surface of the hard tissue of interest, where the template is configured to deform to span the defective portion, and where the template comprises a wireframe formed of ridge-curves and tiling-curves; and

means for determining an external shape of ~~an-implant~~ the medical device, as a function of respective shapes of the defective portion and the template, for repairing the defective portion.

11. (Original) The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the image is a volumetric image of the hard tissue.

12. (Original) The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 11, wherein the volumetric image is a CT image.

13. (Currently Amended) The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, further including:

means for determining a position for seating the ~~implant~~ medical device into the defective portion.

14. (Original) The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the template is warped around a deformed bone.

15. (Original) The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the template is warped to an external surface of the non-defective portion of the hard tissue of interest.

16. (Original) The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the normative shape of the template is determined from additional hard tissue representative of the hard tissue of interest.

17. (Original) The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the normative shape of the template is determined as a function of an average shape of the hard tissue of interest.

18. (Currently Amended) A method for repairing a defect in a hard tissue of interest included in a subject, the method comprising:

producing a volumetric image showing a defective portion, which includes the defect, and a non-defective portion of the hard tissue of interest within in the subject;

segmenting the hard tissue of interest from the image;

warping a template, having an average shape of the hard tissue of interest, over the defective and non-defective portions, where the template comprises a wireframe derived from ridge-curves and geodesic lines;

determining a shape of ~~[[the]]~~ an implant, as a function of respective shapes of the defective portion and the template; and

inserting the implant into the defective portion for repairing the defect, where the implant is configured to fit within the contours of the defective portion.

19. (Original) The method for repairing a defect as set forth in claim 18, further including:

updating the average shape as a function of a shape of the nondefective portion.

20. (Original) The method for repairing a defect as set forth in claim 18, further including:

determining the normative shape from another section of hard tissue representing a substantially mirror image of the hard tissue of interest.